

Chapter 2.4 POLLUTION PREVENTION (P2)



Pollution prevention (or P2) is recognized as the most cost-effective form of environmental protection, because it is an environmental management strategy that emphasizes the elimination or reduction of wastes **at the source of generation**. Whereas traditional waste management techniques such as treatment and disposal concentrate on managing wastes, P2 focuses on the question, **"Why are the wastes produced in the first place?"**

Treatment, handling, and disposal of wastes can result in significant financial and labor costs, and involve regulatory and compliance issues. P2 techniques can offer companies the opportunity to reduce or eliminate these costs, while lessening their regulatory burden and decreasing environmental impacts.

Many major industries with environmental staffs are aware of and have implemented pollution prevention techniques. In fact, industry has really been the driving force in promoting pollution prevention concept. These companies are realizing the benefits of P2 techniques and are using P2 to help their "bottom lines" and to gain a competitive advantage over other companies in their market. Other facilities, however, especially small- to medium-sized companies and public sector facilities, do not have trained environmental staff persons who have the time to investigate P2 opportunities.

Going Beyond Compliance. Environmental regulations are legally-enforceable standards and rules which place limits on environmental impacts from business and other activities. However, they are based on a system of "permitted thresholds", which allow a certain degree of impact. Pollution prevention, although not legally required, provides the opportunity for businesses and others to move voluntarily beyond mere compliance; to continually strive to do better, year after year; and move well below the enforceable thresholds of regulations. Reductions through P2 are driven by cost savings, not regulatory enforcement.

Environmental Management Systems. Many forward-thinking companies that understand the value of P2 have realized that environmental aspects are a significant factor that affects the very success or failure of their organization. These facilities have developed "environmental management systems" (EMS), which ensure that environmental factors are communicated within the overall management of the company. In addition, a good EMS set goals for "continuous improvements" that help the facility move beyond compliance towards a conceptual goal of "zero discharge" or "no net impact" on the environment.

Cost Savings & Environmental Benefits? Through P2 techniques, facilities can eliminate or significantly decrease the quantity and/or toxicity of their generated wastes. Facilities can avoid the direct costs and long-term liabilities associated with producing and managing those wastes. Source reduction techniques often result in increased **production efficiencies** which can actually decrease raw material purchasing needs. Also, P2 techniques emphasize a multi-media approach that avoids transferring contamination from one media to another.

Wastes are essentially wasted raw materials, and P2 efforts strive to conserve the use of raw materials by using them as efficiently as possible. In addition, P2 stresses the reduction of toxicity, and prevention of spills and raw material/product losses. P2 or source reduction is distinguished from recycling and reuse efforts, because these management techniques involve waste handling, collection, and reprocessing into a new raw material or useable product. True source reduction eliminates the need and the costs associated with handling wastes.

Where Does P2 Focus? P2 techniques are proactive approaches and solutions to waste management issues and problems. Categories include process efficiency improvements, materials substitution, inventory control, preventive maintenance, energy and water conservation, in-process recycling, and office waste reduction. These techniques may involve complex capital upgrades for new equipment and computerized automation of monitoring equipment. However, many P2 techniques are as simple as using less-toxic raw materials or changing certain facility procedures.

What Does P2 Mean for Water Quality? P2's multi-media approach ensures that air and waste problems are not "solved" by putting them into water. P2 clearly demonstrates that "dilution is NOT the solution". P2 focuses on water conservation and use reduction.

Compliance with environmental regulations and permit requirements may help to sustain water quality where it is; however, it will not result in long-term improvements and it will not allow for long-term economic growth at the same time. Pollution prevention techniques, however, will allow these improvements to take place simultaneously. In fact, voluntary P2 is viewed by grass-roots efforts, such as the Chesapeake Bay Program, as the key to long-term improvements to water quality.

DEQ's Office of Pollution Prevention

Because of its importance, EPA provides funding for P2 efforts in almost every state. The Virginia DEQ's Office of Pollution Prevention (OPP) is the state's central point for pollution prevention techniques and is available to assist facilities throughout the state. OPP staff provides technical consultation and on-site assistance to business, industry, and government entities. In addition, OPP staff provides outreach services such as training, informational services (www.deq.state.va.us/p2), public recognition, voluntary programs, and sector-based initiatives. Assistance through OPP is completely non-regulatory, confidential, and provided at no charge.

Technical Assistance. OPP technical staff is located throughout the state at various DEQ regional offices to provide 1-on-1 assistance to business, industry, government, and citizens. Upon request, OPP staff will research waste issues and/or problems and provide requestors with the information they need in a timely fashion. OPP staff is also trained in performing on-site P2 opportunity assessments. These site visits are non-regulatory and confidential and can help facilities identify potential solutions to their waste management problems. During site visits, OPP staff will tour the facility asking questions about production, the flow of raw materials, and other waste management issues in order to identify potential P2 opportunities. After an assessment, OPP staff researches issues further and provides suggestions for reducing wastes. Facilities are under no requirements to implement OPP suggestions, and some suggestions may require additional consideration and research by the company. Because the visits are strictly voluntary, the majority of OPP's suggestions are intended to save the company money while protecting the environment.

Outreach. DEQ's OPP conducts outreach activities to promote the use of P2 as the preferred solution to waste management problems. Outreach consists of training and presentations, publications and the P2 webpage, public recognition, conferences and workshops, and the coordination of voluntary, sector-based programs. Outreach staff works with companies and technical staff to document "P2 successes" so that these successes might help and encourage others to pursue similar projects.

Virginia Innovations in Pollution Prevention (VIP2)

The "Virginia Innovations in Pollution Prevention" or "VIP2" initiative is based on the premise that the target for the next century must be to go "beyond compliance" with environmental regulation and move toward a sustainable economy of cleaner, more efficient technologies and operations. VIP2 was implemented in 1999 as the organizational structure for the state's activities to promote Pollution Prevention and Environmental Management Systems. VIP2 consists of seven components that have each been implemented by DEQ in past 3 years (www.deq.state.va.us/p2/vip2.html). They include the following:



- X **Environmental Excellence through EMS and Pollution Prevention.** DEQ has developed a program to recognize environmental leadership in the development of environmental management systems (EMS). The Virginia Environmental Excellence Program currently has over 80 participants, 10 of which have fully-implemented EMSs and have achieved the level of "Exemplary Environmental Enterprise".
- X **Mentoring.** DEQ developed a business-to-business mentoring network for pollution prevention, environmental management systems, and compliance. DEQ developed the Virginia Mentoring Network (VMN), a web-based tool that provides access to over 90 mentors, who have volunteered to provide business-to-business and business-to-government assistance.
- X **Environmental technology.** DEQ has an Environmental Technology program that facilitates the transfer and implementation of new environmental technologies.
- X **Financial incentives.** DEQ has developed a 1-stop resource entitled "Financial Incentives for

- Environmental Project”, and provides low interest loans for P2 projects through the “Virginia Small Business Compliance Assistance Loan Fund”.
- X **Integration of Pollution Prevention within DEQ Regulatory Programs.** DEQ has integrated pollution prevention into all of its operational functions through a series of pilot projects so that regulatory staff will be aware of and help identify P2 opportunities. In addition, DEQ has developed its own EMS and included P2 and EMS goals in job descriptions and yearly work plans.
 - X **Expanded Technical Assistance.** The technical staff was expanded to provide assistance at the regional level.
 - X **Environmental Education.** DEQ’s environmental education program was expanded and strives to integrate pollution prevention concepts in the statewide environmental education curricula.

Other Initiatives

In addition to VIP2, OPP has striven to support P2 and EMS activities through a wide variety of voluntary, sector-based programs and initiatives.

- Department of Defense Agreement. DEQ is working with 22 Virginia Department of Defense facilities to develop partnership for achieving voluntary P2, EMS, and mentoring projects.
- Businesses for the Bay. DEQ coordinates Virginia functions of this voluntary P2 initiative to restore the Chesapeake Bay. There are more than 235 Virginia participants.
- Strategic Goals for Metalfinishing. DEQ is coordinating a program that provides incentives to metal finishers and POTWs to go beyond regulatory compliance.
- Virginia Clean Marinas Program. DEQ is working with the Virginia Institute of Marine Sciences & the Department of Conservation & Recreation to support marina certification program and to integrate it with the Virginia Environmental Excellence Program.
- DEQ Environmental Management System. DEQ has developed an environmental management system for management of the DEQ central, regional, and satellite facilities.
- Environmental Lodging. DEQ is working to promote P2 in the hospitality industry. Approximately 50 Virginia facilities are participating in the program.
- Mercury Reduction Program. DEQ is working with Virginia Dental Association, American Healthcare Association, healthcare providers, pharmacies, local governments, and mentors to collect and recycle elemental mercury and promote substitution of non-mercury containing thermometers and other instrumentation.
- Virginia Healthcare Challenge. DEQ is challenging Virginia hospitals to reach goals of MOU between EPA and the American Healthcare Association.
- Green Electronics. DEQ is encouraging consumers to purchase and suppliers to design environmentally-preferable electronic components. DEQ is also participating in EPA Region III’s initiative to facilitate the recycling of electronic components. A series of pilot collections are planned for 2002.
- WasteWise. DEQ is a member of EPA’s solid waste reduction program, and promotes WasteWise to other businesses and government agencies.
- Local Government EMS. DEQ is assisting the in the development of Environmental Management Systems for Virginia localities.
- Energy Efficiency. DEQ is working with the State Energy Plan to develop a systematic approach for increasing the energy efficiency of state facilities and to reduce energy consumption.
- P2 Newsletter. DEQ produces a quarterly newsletter, *Pollution Prevention Virginia* to promote P2 activities statewide.